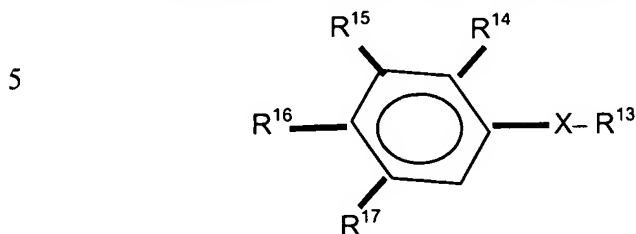


## What is claimed is

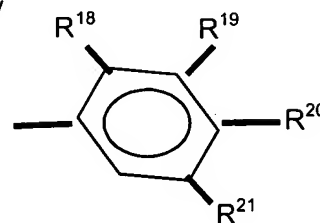
1. A radiation-sensitive composition comprising
  - a. an acetal resin derived from polyvinyl alcohol by condensation with aldehydes
  - and
  - b. a developability-enhancing compound.
2. The composition of claim 1, further comprising a radiation-to-heat converting compound.
3. The composition of claim 2, in which the radiation-to-heat converting compound is an infrared light-to-heat converting compound.
4. The composition of claim 3, further comprising a dissolution inhibitor.
5. A composition according to claim 1, wherein the developability-enhancing compound is at least one of
  - a. an alcohol having at least one of an alkyl radical of 12 - 60 carbon atoms, a fluoroalkyl radical of 4 - 60 carbon atoms and a fluoroalkylaryl radical of 7 - 60 carbon atoms;
  - b. a polyol;
  - c. a monohydric phenol;
  - d. a polyhydric phenol;
  - e. a compound containing thiol functionality;
  - f. an anionic lithium salt that is one of a carboxylate, thiocarboxylate, sulfate, sulfonate, phosphate, phosphite, nitrate and nitrite;
  - g. an ester of a phosphorous-containing acid;
  - h. an amide of a phosphorus containing acid;
  - i. a polysiloxane;
  - j. a quaternary ammonium salt having a free hydroxyl group.
  - k. an azo compound;
  - l. a compound containing – NH – NH - functionality;

m. a compound containing  $\text{—NH—N=C}$  functionality;

n. a compound containing the structure



10 where X is one of  $\text{—S—}$ ,  $\text{S=O}$ ,  $\text{C=O}$  or  $\text{CO}_2$  and where R<sup>13</sup> can be a C<sub>1</sub> to C<sub>12</sub> alkyl, benzyl or structure E, where E is given by



and where R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup> can be one of H and OH.

- 15
- o. a substituted aromatic acid;
  - p. a substituted aromatic ester;
  - q. a substituted aromatic amide and
  - r. a compound containing sulfone functionality.

20 6. A composition according to claim 5, wherein the polyol is dimethicone copolyol.

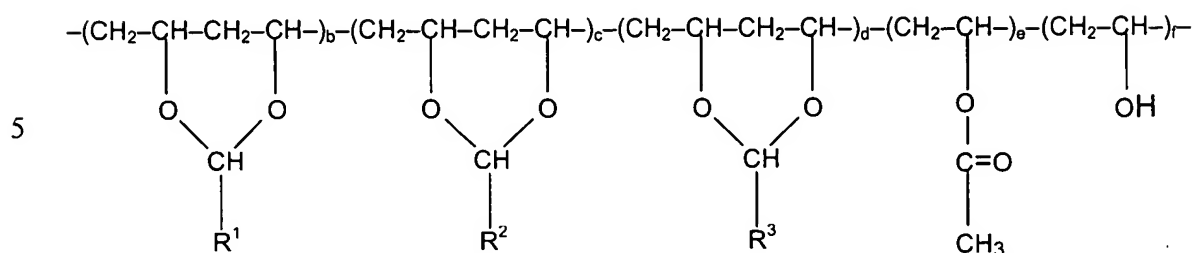
7. A composition according to claim 5, wherein the polyhydric phenol is at least one of resorcinol, 4-hexylresorcinol, n-dodecylresorcinol and 1-naphthole.

25 8. A composition according to claim 5, wherein the polyhydric phenol is one of pyrogallol, phloroglucinol, 1,2,4-benzenetriol and their alkyl and fluoroalkyl derivatives.

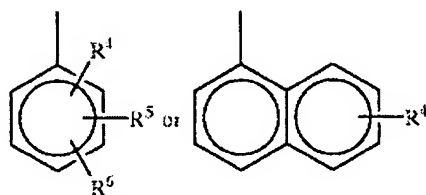
30 9. A composition according to claim 5, wherein the anionic lithium salt is one of lithium 3-(1H,1H,2H,2H-fluoroalkyl) propionate and 3-[(1H,1H,2H,2H-fluoroalkyl)thio]propionate, lithium trifluoromethane sulfonate and lithium perfluorooctylethylsulfonate.

10. A composition according to claim 5, wherein the ester of a phosphorous-containing acid is one of  $P(OH)(OR)_2$ ,  $P(OH)_2(OR)$ ,  $P(OH)_2[O-R-N(CH_2-CH_2-OH)_2]$ ,  $P(OR)_2[O-R-NH(CH_2-CH_2-OH)_2]$ , where R is an alkyl, aryl, alkylaryl, polyethylene oxide, polypropyleneoxide or combination thereof.
11. A composition according to claim 5, wherein the ester of a phosphorus containing acid is a nonylphenol phosphate ester.
12. A composition according to claim 5, wherein the amide of a phosphorous-containing acid is one of  $P(OH)(ONHR)_2$ ,  $P(OH)_2(ONHR)$ ,  $P(OR)_2[O-NH(CH_2-CH_2-OH)_2]$ ,  $P(OR)[O-NH(CH_2-CH_2-OH)_2]_2$ , where R is an alkyl, aryl, polyethylene oxide, polypropyleneoxide or combination thereof.
13. A composition according to claim 5, wherein the polysiloxane is  $R[OSi(OCH_3)_2]_n-Si(OCH_3)(OH)_2$  where R is an alky, aryl, polyethyleneoxide, polypropyleneoxide group or combination thereof and  $n = 2-1000$ .
14. A composition according to claim 5, wherein the substituted aromatic acid is at least one of 2-nitrobenzoic acid, 3-Nitrobenzoic acid, 4-Nitrobenzoic acid, 2,4-Dinitrobenzoic acid, 2,4-Dichlorobenzoic acid, 2-Hydroxy-1-napthoic acid and 3-Hydroxy-2-napthoic acid.
15. A composition according to claim 5, wherein the substituted aromatic ester is methyl salicylate, phenyl salicylate, benzyl-4-hydroxybenzoate, Butyl-4-hydroxybenzoate and methyl-4-hydroxy benzoate.
16. A composition according to claim 5, wherein the substituted aromatic amide is 3-nitrobenzamide and (2'-Hydroxyethyl)-2,4-dihydroxybenzamide.

17. The composition of claim 1, wherein the acetal resin has the structure



in which  $\text{R}^1$  is  $-\text{C}_n\text{H}_{2n+1}$  where  $n=1$  to  $12$ , and  $\text{R}^2$  is



10 wherein  $\text{R}^4 = -\text{OH}$ ;  
 $\text{R}^5 = -\text{OH}$  or  $-\text{OCH}_3$  or  $\text{Br}-$  or  $-\text{O}-\text{CH}_2-\text{C}\equiv\text{CH}$  and  
 $\text{R}^6 = \text{Br}-$  or  $\text{NO}_2$

$\text{R}^3 = -(\text{CH}_2)_t-\text{COOH}$ ,  $-\text{C}\equiv\text{CH}$ , or



15 where  $\text{R}^7 = \text{COOH}$ ,  $-(\text{CH}_2)_t-\text{COOH}$ ,  $-\text{O}-(\text{CH}_2)_t-\text{COOH}$

and in which  $t = 1$  to  $4$ , and where  $b = 5$  to  $40$  mole %, preferably  $15$  to  $35$  mole %

$c = 10$  to  $60$  mole %, preferably  $20$  to  $40$  mole %

$d = 0$  to  $20$  mole %, preferably  $0$  to  $10$  mole %

$e = 2$  to  $20$  mole %, preferably  $1$  to  $10$  mole %

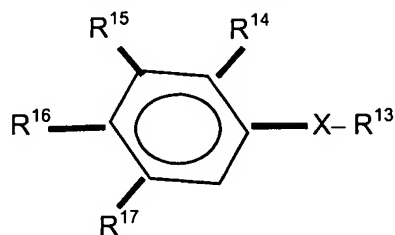
20 and  $f = 5$  to  $50$  mole %, preferably  $15$  to  $40$  mole %.

18. A composition according to claim 17, wherein the developability-enhancing compound is at least one of

- 25
- an alcohol having at least one of an alkyl radical of  $12 - 60$  carbon atoms, a fluoroalkyl radical of  $4 - 60$  carbon atoms and a fluoroalkylaryl radical of  $7 - 60$  carbon atoms;
  - a polyol;

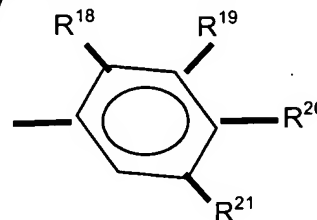
- c. a monohydric phenol;  
 d. a polyhydric phenol;  
 e. a compound containing thiol functionality;  
 f. an anionic lithium salt that is one of a carboxylate, thiocarboxylate, sulfate,  
 5 sulfonate, phosphate, phosphite, nitrate and nitrite;  
 g. an ester of a phosphorous-containing acid;  
 h. an amide of a phosphorus containing acid;  
 i. a polysiloxane;  
 j. a quaternary ammonium salt having a free hydroxyl group.  
 10 k. an azo compound;  
 l. a compound containing – NH – NH - functionality;

- m. a compound containing –NH–N=C' functionality;  
 15 n. a compound containing the structure



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where X is one of –S–, S=O, C=O or CO<sub>2</sub> and where R<sup>13</sup> can be a C<sub>1</sub> to C<sub>12</sub> alkyl, benzyl or structure E, where E is given by



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and where R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup> can be one of H and OH.

- o. a substituted aromatic acid;  
 p. a substituted aromatic ester;  
 q. a substituted aromatic amide and  
 30 r. a compound containing sulfone functionality.

19. A composition according to claim 18, wherein the polyhydric phenol is at least one of resorcinol, 4-hexylresorcinol, n-dodecylresorcinol and 1-naphthole.
20. A radiation-sensitive composition comprising:
- 5       a. at least one of resorcinol, n-dodecyl resorcinol, 4-hexyl resorcinol and 1-naphthole,
- b. an acetal resin formed by the condensation of polyvinyl alcohol with aldehydes,
- c. a dissolution inhibitor and
- d. an infrared light-to-heat converting compound.
- 10
21. An imageable element comprising,
- a. a substrate and
- b. a coated and dried layer of the composition of claim 2 on a surface of the substrate.
- 15
22. An imageable element comprising,
- a. a substrate and
- b. a coated and dried layer of the composition of claim 5 on a surface of the substrate.
- 20
23. An imageable element comprising,
- a. a substrate and
- b. a coated and dried layer of the composition of claim 18 on a surface of the substrate.
- 25
24. An imageable element comprising,
- a. a substrate and
- b. a coated and dried layer of the composition of claim 20 on a surface of the substrate.
- 30
25. A positive-working lithographic printing precursor comprising a layer of a radiation-sensitive composition on a hydrophilic lithographic printing surface, the composition comprising
- 35       a. an acetal resin derived from polyvinyl alcohol by condensation with aldehydes and

b. a developability-enhancing compound.

26. The precursor of claim 25, wherein the composition further comprises an infrared light-to-heat converting compound.

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27. The precursor of claim 26, wherein the composition further comprises a dissolution inhibitor.

10 28. The precursor of claim 25, wherein the developability-enhancing compound is at least one of

a. an alcohol having at least one of an alkyl radical of 12 - 60 carbon atoms, a fluoroalkyl radical of 4 - 60 carbon atoms and a fluoroalkylaryl radical of 7 - 60 carbon atoms;

15

b. a polyol;

c. a monohydric phenol;

d. a polyhydric phenol;

e. a compound containing thiol functionality;

20 f. an anionic lithium salt that is one of a carboxylate, thiocarboxylate, sulfate, sulfonate, phosphate, phosphite, nitrate and nitrite;

g. an ester of a phosphorous-containing acid;

h. an amide of a phosphorus containing acid;

i. a polysiloxane;

j. a quaternary ammonium salt having a free hydroxyl group.

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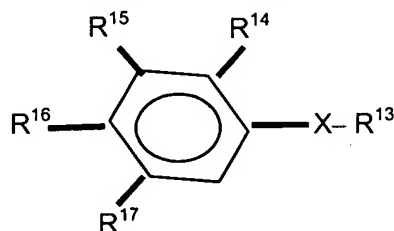
k. an azo compound;

l. a compound containing – NH – NH - functionality;

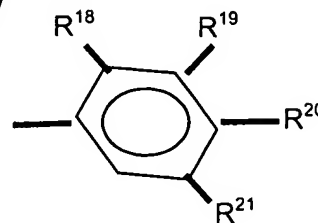
m. a compound containing  $-\text{NH}-\text{N}=\text{C}'$  functionality;

30

n. a compound containing the structure



where X is one of  $-S-$ ,  $S=O$ ,  $C=O$  or  $CO_2$  and where  $R^{13}$  can be a  $C_1$  to  $C_{12}$  alkyl, benzyl or structure E, where E is given by



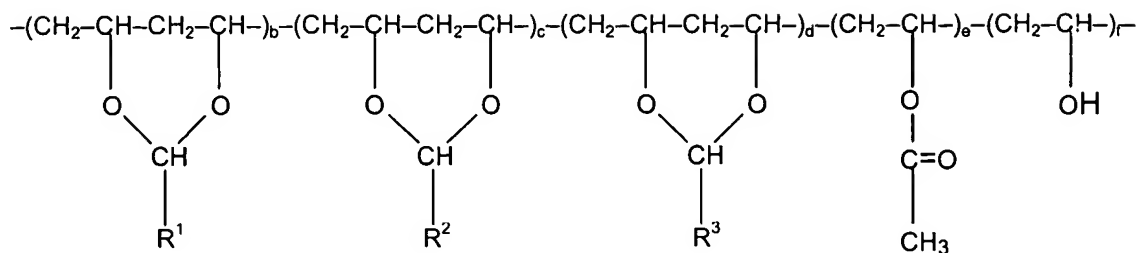
and where  $R^{14}$ ,  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{18}$ ,  $R^{19}$ ,  $R^{20}$ ,  $R^{21}$  can be one of H and OH.

- o. a substituted aromatic acid;
  - p. a substituted aromatic ester;
  - 10 q. a substituted aromatic amide and
  - r. a compound containing sulfone functionality.
29. The precursor of claim 28, wherein the polyol is dimethicone copolyol.
- 15 30. The precursor of claim 28, wherein the polyhydric phenol is at least one of resorcinol, 4-hexylresorcinol, n-dodecylresorcinol and 1-naphthole.
31. The precursor of claim 28, wherein the polyhydric phenol is one of pyrogallol, phloroglucinol, 1,2,4-benzenetriol and their alkyl and fluoroalkyl derivatives.
- 20 32. The precursor of claim 28, wherein the anionic lithium salt is one of lithium 3-(1H,1H,2H,2H-fluoroalkyl) propionate and 3-[(1H,1H,2H,2H-fluoroalkyl)thio]propionate, lithium trifluoromethane sulfonate and lithium perfluorooctylethylsulfonate.
- 25 33. The precursor of claim 28, wherein the ester of a phosphorus containing acid is one of  $P(OH)(OR)_2$ ,  $P(OH)_2(OR)$ ,  $P(OH)_2[O-R-N(CH_2-CH_2-OH)_2]$ ,  $P(OR)_2[O-R-NH(CH_2-CH_2-OH)_2]$ , where R is an alkyl, aryl, alkylaryl, polyethylene oxide, polypropyleneoxide or combination thereof.
- 30 34. The precursor of claim 28, wherein the ester of a phosphorus containing acid is a nonylphenol phosphate ester.



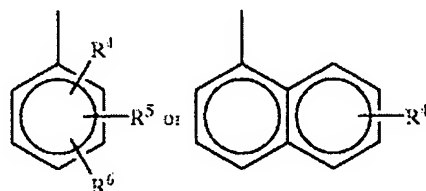
35. The precursor of claim 28, wherein the amide of a phosphorus containing acid is one of  $P(OH)(ONHR)_2$ ,  $P(OH)_2(ONHR)$ ,  $P(OR)_2[O-NH(CH_2-CH_2-OH)_2]$ ,  $P(OR)[O-NH(CH_2-CH_2-OH)_2]_2$ , where R is an alkyl, aryl, polyethylene oxide, polypropyleneoxide or combination thereof.
36. The precursor of claim 28, wherein the polysiloxane is  $R[OSi(OCH_3)_2]_n-Si(OCH_3)(OH)_2$  where R is an alkyl, aryl, polyethyleneoxide, polypropyleneoxide group or combination thereof and  $n = 2-1000$ .
37. A composition according to claim 28, wherein the substituted aromatic acid is at least one of 2-nitrobenzoic acid, 3-Nitrobenzoic acid, 4-Nitrobenzoic acid, 2,4-Dinitrobenzoic acid, 2,4-Dichlorobenzoic acid, 2-Hydroxy-1-naphthoic acid and 3-Hydroxy-2-naphthoic acid.
38. A composition according to claim 28, wherein the substituted aromatic ester is methyl salicylate, phenyl salicylate, benzyl-4-hydroxybenzoate, Butyl-4-hydroxybenzoate and methyl-4-hydroxy benzoate.
39. A composition according to claim 28, wherein the substituted aromatic amide is 3-nitrobenzamide and (2'-Hydroxyethyl)-2,4-dihydroxybenzamide.
40. A positive-working lithographic printing precursor comprising a layer of a radiation-sensitive composition on a hydrophilic lithographic printing surface, the composition comprising
- an acetal resin derived from polyvinyl alcohol by condensation with aldehydes and
  - a developability-enhancing compound,

wherein the acetal resin has the structure



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in which  $R^1$  is  $-\text{C}_n\text{H}_{2n+1}$  where  $n=1$  to  $12$ , and  $R^2$  is



wherein

$R^4 = -\text{OH};$

$R^5 = -\text{OH}$  or  $-\text{OCH}_3$  or  $\text{Br}-$  or  $-\text{O}-\text{CH}_2-\text{C}\equiv\text{CH}$  and

$R^6 = \text{Br}-$  or  $\text{NO}_2$

10

$R^3 = -(\text{CH}_2)_t-\text{COOH}$ ,  $-\text{C}\equiv\text{CH}$ , or



where  $R^7 = \text{COOH}$ ,  $-(\text{CH}_2)_t-\text{COOH}$ ,  $-\text{O}-(\text{CH}_2)_t-\text{COOH}$

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and in which  $t = 1$  to  $4$ , and where  $b = 5$  to  $40$  mole %, preferably  $15$  to  $35$  mole %

$c = 10$  to  $60$  mole %, preferably  $20$  to  $40$  mole %

$d = 0$  to  $20$  mole %, preferably  $0$  to  $10$  mole %

$e = 2$  to  $20$  mole %, preferably  $1$  to  $10$  mole %

and  $f = 5$  to  $50$  mole %, preferably  $15$  to  $40$  mole %.

20

41. The precursor of claim 40, wherein the developability-enhancing compound is at least one of

- an alcohol having at least one of an alkyl radical of  $12 - 60$  carbon atoms, a fluoroalkyl radical of  $4 - 60$  carbon atoms and a fluoroalkylaryl radical of  $7 - 60$  carbon atoms;
- a polyol;
- a monohydric phenol;

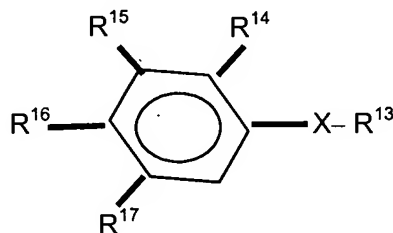
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- d. a polyhydric phenol;
- e. a compound containing thiol functionality;
- f. an anionic lithium salt that is one of a carboxylate, thiocarboxylate, sulfate, sulfonate, phosphate, phosphite, nitrate and nitrite;
- 5 g. an ester of a phosphorous-containing acid;
- h. an amide of a phosphorus containing acid;
- i. a polysiloxane;
- j. a quaternary ammonium salt having a free hydroxyl group.
- k. an azo compound;
- 10 l. a compound containing –NH – NH - functionality;

m. a compound containing  $-\text{NH}-\text{N}=\text{C}'$  functionality;

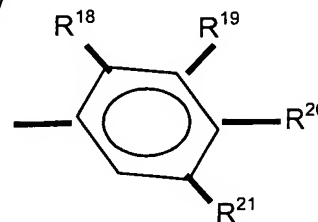
- n. a compound containing the structure

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where X is one of –S–, S=O, C=O or CO<sub>2</sub> and where R<sup>13</sup> can be a C<sub>1</sub> to C<sub>12</sub> alkyl, benzyl or structure E, where E is given by



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and where R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup> can be one of H and OH.

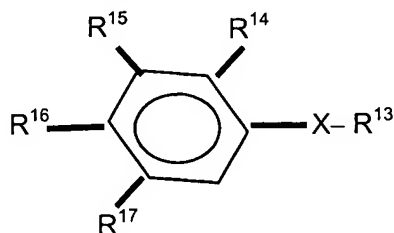
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- o. a substituted aromatic acid;
- p. a substituted aromatic ester;
- q. a substituted aromatic amide and
- r. a compound containing sulfone functionality.
42. The precursor of claim 41, wherein the polyhydric phenol is at least one of resorcinol, 4-hexylresorcinol, n-dodecylresorcinol and 1-naphthole.

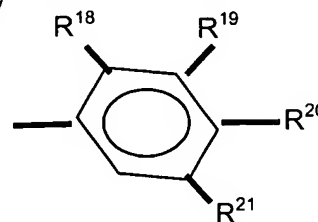
43. A positive-working lithographic printing precursor comprising a layer of a radiation-sensitive composition on a hydrophilic lithographic printing surface, the composition comprising:
- 5     a. at least one of resorcinol, n-dodecyl resorcinol, 4-hexyl resorcinol and 1-naphthole,
- b. an acetal resin formed by the condensation of polyvinyl alcohol with aldehydes,
- c. a dissolution inhibitor and
- d. an infrared light-to-heat converting compound.
- 10
44. A method for making a positive-working lithographic printing precursor, the method comprising the steps of coating a hydrophilic lithographic printing surface with a layer of a radiation-sensitive composition and drying the layer, wherein the composition comprises
- 15     a. an acetal resin derived from polyvinyl alcohol by condensation with aldehydes and
- b. a developability-enhancing compound.
45. The method of claim 44, wherein the composition further comprises an infrared
- 20     light-to-heat converting compound.
46. The method of claim 45, wherein the composition further comprises a dissolution inhibitor.
- 25     47. The method of claim 45, wherein the developability-enhancing compound is at least one of
- 30     a. an alcohol having at least one of an alkyl radical of 12 - 60 carbon atoms, a fluoroalkyl radical of 4 - 60 carbon atoms and a fluoroalkylaryl radical of 7 - 60 carbon atoms;
- b. a polyol;
- c. a monohydric phenol;
- d. a polyhydric phenol;
- e. a compound containing thiol functionality;

- f. an anionic lithium salt that is one of a carboxylate, thiocarboxylate, sulfate, sulfonate, phosphate, phosphite, nitrate and nitrite;
- g. an ester of a phosphorous-containing acid;
- h. an amide of a phosphorus containing acid;
- 5 i. a polysiloxane;
- j. a quaternary ammonium salt having a free hydroxyl group.
- k. an azo compound;
- l. a compound containing – NH – NH - functionality;

- 10 m. a compound containing –NH–N=C' functionality;
- n. a compound containing the structure



where X is one of –S–, S=O, C=O or CO<sub>2</sub> and where R<sup>13</sup> can be a C<sub>1</sub> to C<sub>12</sub> alkyl, benzyl or structure E, where E is given by



and where R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup> can be one of H and OH.

- o. a substituted aromatic acid;
- 25 p. a substituted aromatic ester;
- q. a substituted aromatic amide and
- r. a compound containing sulfone functionality.

48. The method of claim 47, wherein the polyol is dimethicone copolyol.

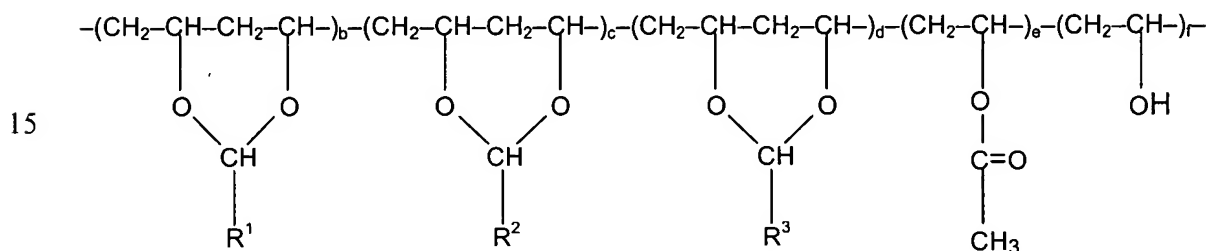
49. The method of claim 47, wherein the polyhydric phenol is at least one of resorcinol, 4-hexylresorcinol, n-dodecylresorcinol and 1-naphthole.

50. The method of claim 47, wherein the polyhydric phenol is one of pyrogallol, phloroglucinol, 1,2,4-benzenetriol and their alkyl and fluoroalkyl derivatives.
- 5 51. The method of claim 47, wherein the anionic lithium salt is one of lithium 3-(1H,1H,2H,2H-fluoroalkyl) propionate and 3-[(1H,1H,2H,2H-fluoroalkyl)thio]propionate, lithium trifluoromethane sulfonate and lithium perfluorooctylethylsulfonate.
- 10 52. The method of claim 47, wherein the ester of a phosphorus containing acid is one of  $P(OH)(OR)_2$ ,  $P(OH)_2(OR)$ ,  $P(OH)_2[O-R-N(CH_2-CH_2-OH)_2]$ ,  $P(OR)_2[O-R-NH(CH_2-CH_2-OH)_2]$ , where R is an alkyl, aryl, alkylaryl, polyethylene oxide, polypropyleneoxide or combination thereof.
- 15 53. The method of claim 47, wherein the ester of a phosphorus containing acid is a nonylphenol phosphate ester.
54. The method of claim 47, wherein the amide of a phosphorus containing acid is one of  $P(OH)(ONHR)_2$ ,  $P(OH)_2(ONHR)$ ,  $P(OR)_2[O-NH(CH_2-CH_2-OH)_2]$ ,  $P(OR)[O-NH(CH_2-CH_2-OH)_2]_2$ , where R is an alkyl, aryl, polyethylene oxide, polypropyleneoxide or combination thereof.
- 20 55. The method of claim 47, wherein the polysiloxane is  $R[OSi(OCH_3)_2]_n-Si(OCH_3)(OH)_2$  where R is an alky, aryl, polyethyleneoxide, polypropyleneoxide group or combination thereof and  $n = 2-1000$ .
- 25 56. A composition according to claim 47, wherein the substituted aromatic acid is at least one of 2-nitrobenzoic acid, 3-Nitrobenzoic acid, 4-Nitrobenzoic acid, 2,4-Dinitrobenzoic acid, 2,4-Dichlorobenzoic acid, 2-Hydroxy-1-napthoic acid and 3-Hydroxy-2-napthoic acid.
- 30 57. A composition according to claim 47, wherein the substituted aromatic ester is methyl salicylate, phenyl salicylate, benzyl-4-hydroxybenzoate, Butyl-4-hydroxybenzoate and methyl-4-hydroxy benzoate.
- 35

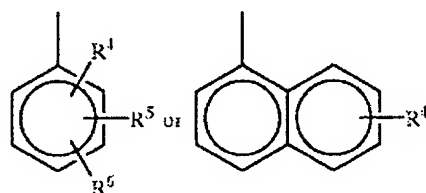
58. A composition according to claim 47, wherein the substituted aromatic amide is 3-nitrobenzamide and (2'-Hydroxyethyl)-2,4-dihydroxybenzamide.

59. A method for making a positive-working lithographic printing precursor, the method comprising the steps of coating a hydrophilic lithographic printing surface with a layer of a radiation-sensitive composition and drying the layer, wherein the composition comprises
- an acetal resin derived from polyvinyl alcohol by condensation with aldehydes and
  - a developability-enhancing compound,

wherein the acetal resin has the structure



in which R<sup>1</sup> is --C<sub>n</sub>H<sub>2n+1</sub> where n=1 to 12, and R<sup>2</sup> is



- 20 wherein R<sup>4</sup> = --OH;  
R<sup>5</sup> = --OH or --OCH<sub>3</sub> or Br-- or --O--CH<sub>2</sub>--C≡CH and  
R<sup>6</sup> = Br-- or NO<sub>2</sub>

R<sup>3</sup> = --(CH<sub>2</sub>)<sub>t</sub>--COOH, --C≡CH, or



- 25 where R<sup>7</sup> = COOH, --(CH<sub>2</sub>)<sub>t</sub>--COOH, --O--(CH<sub>2</sub>)<sub>t</sub>--COOH

and in which t = 1 to 4, and where b = 5 to 40 mole %, preferably 15 to 35 mole %

c = 10 to 60 mole %, preferably 20 to 40 mole %

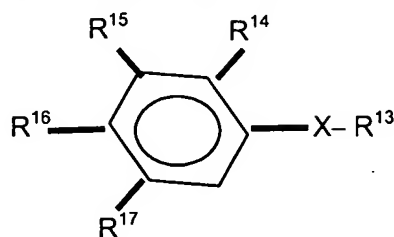
d = 0 to 20 mole %, preferably 0 to 10 mole %

e = 2 to 20 mole %, preferably 1 to 10 mole %  
and f = 5 to 50 mole %, preferably 15 to 40 mole %.

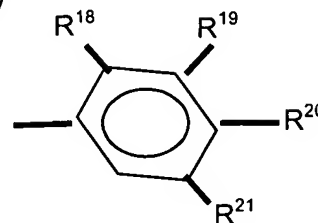
60. The method of claim 59, wherein the developability-enhancing compound is at least one of
- a. an alcohol having at least one of an alkyl radical of 12 - 60 carbon atoms, a fluoroalkyl radical of 4 - 60 carbon atoms and a fluoroalkylaryl radical of 7 - 60 carbon atoms;
  - b. a polyol;
  - c. a monohydric phenol;
  - d. a polyhydric phenol;
  - e. a compound containing thiol functionality;
  - f. an anionic lithium salt that is one of a carboxylate, thiocarboxylate, sulfate, sulfonate, phosphate, phosphite, nitrate and nitrite;
  - g. an ester of a phosphorous-containing acid;
  - h. an amide of a phosphorus containing acid;
  - i. a polysiloxane;
  - j. a quaternary ammonium salt having a free hydroxyl group.
  - k. an azo compound;
  - l. a compound containing – NH – NH – functionality;
  - m. a compound containing  $\text{–NH–N=C}\begin{smallmatrix} \diagup \\ \diagdown \end{smallmatrix}$  functionality;



n. a compound containing the structure



where X is one of -S-, S=O, C=O or CO<sub>2</sub> and where R<sup>13</sup> can be a C<sub>1</sub> to C<sub>12</sub> alkyl, benzyl or structure E, where E is given by



and where R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup> can be one of H and OH.

- o. a substituted aromatic acid;
- p. a substituted aromatic ester;
- q. a substituted aromatic amide and
- r. a compound containing sulfone functionality.

61. The method of claim 60, wherein the polyhydric phenol is at least one of resorcinol, 4-hexylresorcinol, n-dodecylresorcinol and 1-naphthole.

62. A method for making a positive-working lithographic printing precursor, the method comprising the steps of coating a hydrophilic lithographic printing surface with a layer of a radiation-sensitive composition and drying the layer, wherein the composition comprises

- a. at least one of resorcinol, n-dodecyl resorcinol, 4-hexyl resorcinol and 1-naphthole,
- b. an acetal resin formed by the condensation of polyvinyl alcohol with aldehydes,
- c. a dissolution inhibitor and
- d. an infrared light-to-heat converting compound.

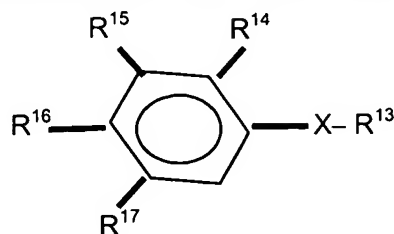
63. A method for making a lithographic printing master, the method comprising the steps of

- a. providing a lithographic printing precursor comprising a layer of a radiation-sensitive composition on a hydrophilic lithographic printing surface, the composition comprising
- 5 i. an acetal resin derived from polyvinyl alcohol by condensation with aldehydes and
- ii. a developability-enhancing compound,
- b. imagewise irradiating areas of the layer with imaging radiation to render the layer more soluble in an aqueous alkaline solution in the areas irradiated.
- 10 64. The method of claim 63, wherein the composition further comprises an infrared light-to-heat converting compound.
65. The method of claim 64, wherein the composition further comprises a dissolution inhibitor.
- 15 66. The method of claim 64, wherein the developability-enhancing compound is at least one of
- a. an alcohol having at least one of an alkyl radical of 12 - 60 carbon atoms, a
- 20 fluoroalkyl radical of 4 - 60 carbon atoms and a fluoroalkylaryl radical of 7 - 60 carbon atoms;
- b. a polyol;
- c. a monohydric phenol;
- d. a polyhydric phenol;
- 25 e. a compound containing thiol functionality;
- f. an anionic lithium salt that is one of a carboxylate, thiocarboxylate, sulfate, sulfonate, phosphate, phosphite, nitrate and nitrite;
- g. an ester of a phosphorous-containing acid;
- h. an amide of a phosphorus containing acid;
- 30 i. a polysiloxane;
- j. a quaternary ammonium salt having a free hydroxyl group.
- k. an azo compound;
- l. a compound containing – NH – NH - functionality;

m. a compound containing  $-\text{NH}-\text{N}=\text{C}'$  functionality;

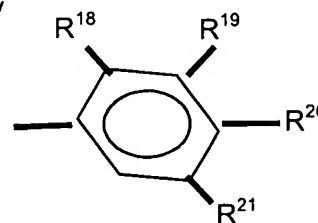
n. a compound containing the structure

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where X is one of  $-\text{S}-$ ,  $\text{S}=\text{O}$ ,  $\text{C}=\text{O}$  or  $\text{CO}_2$  and where R<sup>13</sup> can be a C<sub>1</sub> to C<sub>12</sub> alkyl, benzyl or structure E, where E is given by



and where R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup> can be one of H and OH.

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- o. a substituted aromatic acid;
- p. a substituted aromatic ester;
- q. a substituted aromatic amide and
- r. a compound containing sulfone functionality.

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67. The precursor of claim 66, wherein the polyhydric phenol is at least one of resorcinol, 4-hexylresorcinol, n-dodecylresorcinol and 1-naphthole.

68. A method for making a lithographic printing master, the method comprising the steps of

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a. providing a lithographic printing precursor comprising a layer of a radiation-sensitive composition on a hydrophilic lithographic printing surface, the composition comprising

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- i. an acetal resin formed by the condensation of polyvinyl alcohol with aldehydes,
- ii. at least one of resorcinol, n-dodecyl resorcinol, 4-hexyl resorcinol and 1-naphthole,
- iii. a dissolution inhibitor and

- iv. an infrared light-to-heat converting compound.
- b. imagewise irradiating areas of the layer with imaging radiation to render the layer more soluble in an aqueous alkaline solution in the areas irradiated.